BTEC Assignment Brief

Qualification	Pearson BTEC National Level 3 Diploma in Engineering Pearson BTEC National Level 3 Diploma in Digital Engineering Pearson BTEC National Level 3 Diploma in Manufacturing Engineering Pearson BTEC National Level 3 Extended Diploma in Engineering Pearson BTEC National Level 3 Extended Diploma in Computer Engineering Pearson BTEC National Level 3 Extended Diploma in Manufacturing Engineering Pearson BTEC National Level 3 Extended Diploma in Mechanical Engineering
Unit number and title	**Unit 40: Computer Aided Manufacture and Planning**
Learning aim(s)	**A:** Examine the benefits, technology and applications of computer-aided manufacturing systems that improve the operation
Assignment title	CAM Systems in Industry
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You have been employed as an apprentice engineer at a small engineering firm producing bespoke components using computer aided manufacturing. As part of your apprenticeship experience you have moved into the CAM programming team. You have been asked to perform an investigation of computer aided manufacturing systems to better understand their benefits, the technology and applications, in order to secure your understanding of its use within the company. The company has a range of CAM systems to choose from.

Task 1	You have been asked by your manager on the benefits, technology and applications of computer aided manufacturing (CAM) in the engineering organisation. You are to produce an accurate technical report that gives a balanced evaluation of how **two** different CAM systems can benefit the manufacturing organisation, the technology used and the operation of each system. As part of your report, your manager has asked you to provide information regarding the following, on at least two CAM systems. 1. The benefits of CAM systems, including advantages and disadvantages. 2. The technology used in different CAM systems 3. The operation of different CAM systems 4. Applications of the different CAM systems within the

	context of your report The report should cover the following areas: Consider how a manufacturer achieves the consistency and accuracy of product, components and operations performed. How manufacturers respond to and meet customer demand by utilising systems such as simulation and rapid prototyping, simultaneous manufacture of products and/or components that use parallel operation of tasks, or the manufacture of different parts simultaneously. Research the advantages and disadvantages of how a manufacturer can utilise remote product design and transfer of data to a CAM system, using control systems such as Direct Numerical Control links (DNC) Explore how a company can achieve, reduced changeover times of tooling and products, benefiting from manufacturing product 'right first time' and 'just in time'. Consider the disadvantages of CAM such as, capital cost, purchasing software, hardware, machines, training staff and set-up times. Research FMS systems and the manufacturing technology such as control hardware and software, machines and material handling equipment that form part of the CAM system. Consider the relationship between hardware and control systems need to be deployed to support effective CAM systems, computers, sensors, feedback loops, messaging between the system and a central control. How is the product transferred from station to station, using items like automatic pallets and Automatic Guided Vehicles (AGV). Research what manufacturers need to consider before committing a component product to being manufactured using FMS. Link this to factors such as Lean manufacturing, limited stock holding or inventory.
Checklist of evidence required	A technical report complete with diagrams to cover the benefits, technologies and applications of CAM.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
40/A.D1	Evaluate, using vocational and high-quality written language, the benefits and operation of and technology used in at least two different CAM systems, relating the choices made to the context.
40/A.M1	Analyse the benefits and operation of and technology used in at least two different CAM systems.
40/A.P1	Explain the benefits of two different CAM systems.
40/A.P2	Explain the technology used in and operation of at least two different CAM systems.
Sources of information to support you with this Assignment	**Videos** There are many CAM manufacturing and FM cells videos on video sharing websites.